

We claim:

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1. A pressure vessel comprising:

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a seamless tank shell defining an interior space and having an outer surface with a fuel withdrawal assembly of a direct-sight fuel gauge mechanically fastened thereto.

2. The pressure vessel of claim 1, wherein:

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said tank shell is comprised of a plurality of bosses, each of said bosses having a threaded portion; and

said fuel withdrawal assembly includes a threaded portion engaged with said threaded portion of one of said plurality of bosses.

Sub Q4
3. The pressure vessel of claim 2 wherein said fuel withdrawal assembly is engaged with said one of said plurality of bosses by one and one-half revolutions of sealing force.

4. The pressure vessel of claim 3, wherein said fuel withdrawal assembly includes a withdrawal outlet piece capable of 360 degree rotation when engaged with said fuel withdrawal assembly;

5. The pressure vessel of claim 4, wherein said one of said boss which is engaged with said fuel withdrawal assembly is substantially engaged with said interior space of said tank shell and said fuel withdrawal assembly extends less than 1.5 inches above said outer surface of said tank shell.

Sub Q5
6. The pressure vessel of claim 5, wherein the fuel withdrawal assembly comprises a split-nut housing including two mated halves, said mated halves defining an interior space and forming a continuous threaded portion, and, said withdrawal outlet piece rotably engaged within said interior space defined by said mated halves.

7. The pressure vessel of claim 6, wherein said one of said plurality of bosses to which the fuel withdrawal assembly is connected is comprised of a substantially capped end, the fuel withdrawal assembly is comprised of a lower flange having a lower surface, and the lower surface engages the capped end to form a seal.

8. The pressure vessel of claim 7, wherein the pressure vessel comprises a direct-sight fuel gauge having a threaded portion engaged with said threaded portion of one of said plurality of bosses.

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AQ 9. The pressure vessel of claim 8, wherein the direct-sight fuel gauge comprises:
a gauge neck having a lower portion having threads, an upper portion having threads, and an interior wall having two cradles and a plurality of tabs;
a gauge cap having threads;
a float arm having cross-bars; and
wherein the lower portion of the gauge neck is threadedly connected to said one of said plurality of bosses, the gauge cap is threadedly connected to said upper portion of the gauge neck, the cross-bars of the float arm are engaged with the cradles and said plurality of tabs secure the cross-bars engaged with the cradles.

10. The pressure vessel of claim 9 wherein the tank shell is comprised of high-density polyethylene.

11. The pressure vessel of claim 10 wherein the fuel withdrawal assembly is substantially comprised of 20% glass-filled polypropylene.

12. The pressure vessel of claim 11 wherein the threads of said plurality of bosses are buttress-style threads.

13. The pressure vessel of claim 1, wherein:

said tank shell is comprised of a plurality of bosses, each of said bosses having a threaded portion; and

said direct-sight fuel gauge includes a threaded portion engaged with said threaded portion of one of said plurality of bosses.

14. The pressure vessel of claim 13 wherein said direct-sight fuel gauge is engaged with said one of said plurality of bosses by one and one-half revolutions of sealing force.

15. The pressure vessel of claim 14, wherein the direct-sight fuel gauge comprises:
a gauge neck having a lower portion having threads, an upper portion having threads, and an interior wall having two cradles and a plurality of tabs;

a gauge cap having threads;

a float arm having cross-bars; and

wherein the lower portion of the gauge neck is threadedly connected to said one of said plurality of bosses, the gauge cap is threadedly connected to said upper portion of the gauge neck, the cross-bars of the float arm are engaged with the cradles and said plurality of tabs secure the cross-bars engaged with the cradles.

16. The pressure vessel of claim 15 wherein the tank shell is comprised of high-density polyethylene.

17. The pressure vessel of claim 16 wherein said threaded portions of said plurality of bosses are buttress-style threads.

18. The pressure vessel of claim 13, wherein said tank shell is comprised of high-density polyethylene.

19. The pressure vessel of claim 2, wherein said one of said plurality of bosses to which the fuel withdrawal assembly is engaged is comprised of a substantially capped end, the fuel

withdrawal assembly is comprised of a lower flange having a lower surface, and the lower surface engages the capped end to form a seal.

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20. The pressure vessel of claim 2 wherein said tank shell is comprised of high-density polyethylene.

21. A component in a mechanical system comprising:

a split-nut housing comprising two mated halves, wherein the mated halves define an interior space; and

a spool member captured and rotatable 360 degree within said interior space of said split-nut housing.

22. The mechanical system component of claim 21, wherein the mechanical system component comprises a gas or liquid withdrawal assembly for use in a pressure vessel.

23. The mechanical system component of claim 22, wherein the spool comprises a withdrawal outlet piece.

24. The mechanical system component of claim 23, wherein:

the withdrawal outlet piece comprises, an upper flange, a lower flange and barbed portion located below the lower flange;

the split-nut housing comprising an exterior lower surface;

the interior space comprising an upper flange space;

the upper flange space substantially surrounding the upper flange of the withdrawal outlet piece; and

the lower exterior surface of the split-nut housing contacting the lower flange of the withdrawal outlet piece;

25. The mechanical system component of claim 22; wherein the mated halves of the split-nut housing form a series of threads.

26. The mechanical system component of claim 23, wherein the threads formed by the mated halves of the mated split-nut housing are buttress-style.

27. A direct-sight fuel gauge for a pressure vessel comprising:

a gauge neck comprising a lower portion having threads, an upper portion having threads, and an interior wall having one or more cradles and associated tabs;

a gauge cap having threads;

a float arm having cross-bars;

the gauge cap threadedly connected to said upper portion of the gauge neck; and

said tabs securing the cross-bars of the float arm in locking engagement with said one or more cradles.

28. The direct-sight fuel gauge of claim 27, wherein the float arm is a one-piece, injected molded construction.

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